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MANAGEMENT DEVELOPMENT
FOR JUNIOR CIVIL ENGINEER CORPS OFFICERS
IN PUBLIC WORKS ACTIVITIES

By

Edward L. Cottingham

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Edward L. Cottingham

Lieutenant Commander, Civil Engineer Corps, U.S.N.

Submitted in fulfillment of the
requirements for the course

INDIVIDUAL RESEARCH
Mn-400

United States Naval Postgraduate School
Monterey, California

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ABSTRACT

The professional development of its junior officers is a subject with which the Civil Engineer Corps, consistent with many years of naval policy, custom, and tradition, is vitally concerned. The documents enunciating the policies under which this development activity is to be conducted contain principles which have been found by private industry, management consultants, educators, and social scientists to epitomize the effective executive development program. The methods actually employed in the junior officer working environment, however, have often been found to bear little resemblance to these ideal principles. This study develops the industrial approach to executive development for junior engineers, contrasts it with junior Civil Engineer Corps officer development in public works activities, and suggests methods by which the Civil Engineer Corps system may be improved.

The writer is particularly grateful for the continued guidance and encouragement of Professor John Senger of the U. S. Naval Postgraduate School, and for the very timely help of Captain Mark H. Jordan, CEC, USN, Mr. Ted Murphy, and the Library Staff of the U. S. Naval School, Civil Engineer Corps Officers, without which successful completion of this study would not have been possible.

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CHAPTER I

STATEMENT OF THE PROBLEM

I. BACKGROUND

The Basic Objectives of the Civil Engineer Corps and of the Yards and Docks are:

1. To direct the Civil Engineering effort in the Navy toward:

   (a) Attaining maximum effectiveness and economy throughout the Naval Shore Establishment by employment of the best engineering practices in the conduct of governmental business.

   (b) Supporting to the maximum possible extent the military requirements of the Chief of Naval Operations and the Commandant of the Marine Corps.

2. To extend Civil Engineer Corps and Bureau of Yards and Docks services into those areas where the job can be done most effectively by a military civil engineering organization.

<u>Specific Objectives</u> include:

1. Vigorously supporting in all areas under Bureau management and technical cognizance a well-trained and equipped Naval Construction Force for direct support of the Fleet and Fleet Marine Force and any other deployment in support of National Security Policy.

2. Rendering professional planning services of such a caliber that the Navy's Shore Establishment throughout the entire world be in a state of material readiness and availability to meet the requirements as placed upon it by the Operating Forces.

3. Designing and constructing all shore facilities for the Department of the Navy, and for other agencies when assigned.

4. Attaining the best combination of physical condition, service, and economy of the Naval Shore Facilities

through the maintenance and operation thereof by the application of professional engineering techniques and management.

5. Providing full and effective management to the Navy's real property, domestic and foreign, for the period of the military requirement.

6. Anticipating, well in advance, those significant problems peculiar to Bureau of Yards and Docks functions and directing existing knowledge, materials, and techniques toward the timely solution of these problems.[1]

As of 1 December 1962, this broad engineering-management mission was being carried out by the 1,654 Civil Engineer Corps officers on active duty, of whom 687 or 41½% were junior officers. These officers were distributed as follows:[2]

Station Public Works Departments	312
Public Works Centers	47
District Public Works Offices	73
Resident Officer in Charge of Construction Offices	108
Construction Battalions	99
Miscellaneous Training and Other Billets . .	48
	687

Of these 687 junior officer billets, approximately 320 were estimated to be of a training nature, leaving 367 in operational billets; and of the estimated 320 training billets, approximately 240 were in the station public works depart-

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[1]Department of the Navy, Bureau of Yards and Docks, Policy Reference Book, NAVDOCKS P-329, 11 April 1962, pp. v-vi.

[2]Department of the Navy, Bureau of Yards and Docks, Civil Engineer Corps Directory, NAVDOCKS P-1, December, 1962.

ments and public works centers. From this simple statistical analysis, two facts appear to be obvious: 1. The Civil Engineer Corps (The Corps/CEC) has a definite need for trained and qualified junior officers, since nearly one-fourth of its operational billets are filled by junior officers. 2. The greatest junior officer development effort should be centered around the public works type activities, since three-fourths of the junior officer training billets are located therein.

In addition to the obvious need for such emphasis, there is one other principal reason why this study has been restricted to the question of junior officer development in public works activities. The station public works department and the public works center are essentially industrial organizations, and management/executive development problems in such activities may reasonably be expected to be very similar if not identical to those encountered in private industry. Consequently, an analysis of industrial junior engineer executive development activity yields considerable insight into profitable avenues of development for CEC junior officers.

II. THE PROBLEM

The problem with which this study is principally concerned is solved in the development of answers to the following two questions:

1. How does the Civil Engineer Corps program of manage-

ment development for its junior officers located in public works activities compare with private industrial programs for the executive development of junior engineers?

2. Within the framework of the constraints imposed by the ubiquitous shortages of qualified personnel and funds, how can the management development system for junior CEC officers in public works activities be improved to match its more advanced industrial counterpart?

III. DEFINITIONS OF KEY TERMS

Junior officer. Officers of the rank of Ensign and Lieutenant, Junior Grade. These officers normally have less than four years of active duty service.

Station public works department. The department of one, discrete naval shore activity performing the inspection, operation, repair, and maintenance of public works, public utilities, and construction, transportation, and weight-handling equipment. This department is headed by the Public Works Officer, with the Assistant Public Works Officer as his general assistant and the Shops Engineer as his operational assistant.

Public works center. A separate naval command performing public works tasks for a group of adjacent naval shore activities on a reimbursable basis.

District public works office. The direct representative of the Bureau of Yards and Docks for technical support and

implementation of programs regarding public works tasks performed within an entire Naval District. The District Public Works Officer, as Officer in Charge of Construction, also represents the Bureau of Yards and Docks on all matters concerning new construction for the Navy within his Naval District.

Resident officer in charge of construction. The officer heading the new construction effort at a discrete naval shore activity. He is directly responsible to the Officer in Charge of Construction in his Naval District.

Construction battalion. A completely military organization of CEC officers and enlisted constructionmen, normally engaged in building naval shore facilities in remote or dangerous areas in support of fleet operations.

Billet. A position in a specific organization for an officer to whom are assigned specific duties and responsibilities on a regular basis.

IV. LIMITATIONS

This study is not intended to produce a handbook of quick, effortless, and inexpensive techniques, by-the-numbers usage of which would guarantee fully developed and highly motivated junior officers. There are no such techniques, much popular opinion to the contrary.

Also, this study at times take issue with some present Bureau of Yards and Docks policies. This reflects neither

the attempt to create an atmosphere of omniscience nor the wish to impugn either the motives or the abilities of those officers who formulated these policies. When such issue is taken, it is done on the basis of the sound findings of industrialists, psychologists, sociologists, and other recognized authorities in the field of management development, and not to display vague personal feelings or pre-conceived notions.

CHAPTER II

METHOD, MATERIALS, TECHNIQUES, AND PROCEDURES

In attacking the problem, this study has been ordered in the following manner:

1. A review of the ideal executive development system as it has been developed by private industry since 1950, particularly with regard to junior engineers.

2. A review of the policies of the Navy in general and the Bureau of Yards and Docks in particular with respect to junior officer development, with critical analysis at each step in the evolution of current policies.

3. A critical analysis of the manner in which these policies are presently being implemented by the Civil Engineer Corps in the public works area.

4. An outline of a broad, general program for the development of CEC junior officers stationed in public works activities, considering the needs and abilities of both the activity and the junior officer.

As shown by the composition of the bibliography, the industrial approach to executive development has been constructed from articles published in periodicals rather than from books. This was done in order to include the writings of practitioners and practical researchers as well as educators and social scientists.

CHAPTER III

REVIEW OF THE LITERATURE

1. EXECUTIVE DEVELOPMENT FOR JUNIOR ENGINEERS IN PRIVATE INDUSTRY

Much time, effort, and money are expended by industry each year to recruit likely executive talent. The search has more and more in recent times been conducted not only in schools of business but also in engineering colleges, as many businesses have become more technically complex and the need for engineers at all organizational levels has increased. The increasing use of the engineer-manager has been strikingly demonstrated by the results of a recent nationwide study conducted by the National Society of Professional Engineers. "Of the companies surveyed, 99 per cent planned to and do use engineers in top management positions;".[3] In order to be most effectively utilized, however, the engineer with management abilities and aspirations must be discovered much earlier in his career. If somehow this executive talent can be found and developed during his first four or five years in industry, it will be possible to get a great head-start in preparing and utilizing the engineer-manager.

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[3]James C. Stephens and Gilbert Chester Jacobus, "The Engineer Manager: Training the Technician for Executive Responsibilities," Personnel, XXX, No. 5 (March, 1954), p. 375.

It is quite obvious that the writers whose thoughts form the basis for this portion of the study have approached executive development in an extremely idealistic manner. None of them claimed to have a development program embodying all the desirable characteristics discussed, although they represent some of the best contemporary leadership in industrial (Humble Oil and Refining Company, American Telephone and Telegraph Company, General Electric Company, Thiokol Chemical Corporation, Hughes Aircraft Company, Proctor and Gamble Company, Aerojet-General Corporation, Minnesota Mining and Manufacturing Company, and many others), management consulting (Booz, Allen & Hamilton; Roger Bellows & Associates; McKinsey & Company, Inc.; Edward N. Hay & Associates, Inc.; McKeand Company; and several others), and educational (Carnegie Institute of Technology; Yale University; University of California, both Los Angeles and Berkeley; Michigan State University; University of Chicago; Stevens Institute of Technology; etc.) organizations. This partial listing is sufficient to show that these are the ideals of practicing business, educational, and scientific leaders, and not the hypothetical speculations of armchair philosophers. Consequently, these ideals are able to be approached by the organization willing to allocate the necessary resources to executive development; and so they represent a valid set of standards against which to measure the effectiveness of any effort toward developing the executive potential of young

engineers.

Executive Development Problems

When any industry begins to contemplate the broad sweep of what it terms Executive Development (ED), the first area to be investigated is that of the problems involved. This is as it should be. It is in objective analysis of these problems that the fundamental business question is answered --is ED worth the costs? Particularly since the ascendence of the human relations movement of the Post-World War II years, an ever enlarging group of organizations has answered this question in the affirmative; but this has not altered the fact that large problem areas still exist. These include the organization as a whole, ED programs, personnel in general, and engineers in particular.

The organization. Since the usual enterprise is in business to perpetuate itself at a profit, the first question asked is--how can it get its necessary work done and still allocate a sufficient proportion of its resources to the proper development of its junior executives? The converse of this question is proving to be the more relevant way of approaching the problem, however, since many businessmen are coming to the conclusion that they will be unable to continue their primary missions unless they concern themselves

with ED.[4] But having become convinced of the necessity of engaging in a serious ED effort, there still remain difficult questions to answer, such as:

1. How can the directive, go-getting executive, the wellspring of business vitality, reproduce himself for his organization? When he speaks, people move; they do not sit and develop.

2. How can a stimulating environment for fledgling executives be provided? The first few years will necessarily involve much routine work, which may have two detrimental effects. It may be so boring and uninspiring to the man recently arrived from a stimulating college environment that he will leave, or it may dull his intellectual edge before he becomes senior enough to put his facilities to work. While there are many good reasons why recent arrivals in the management ranks may not be given the authority and responsibility of their seniors in middle and upper management positions, it must be remembered that lower management personnel have the same sorts of needs as do their superiors. In order for these needs to be satisfied, they must engage in activities of the same sort that make for satisfaction in higher management jobs.[5] But if the organization does try

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[4]Robert K. Stolz, "Management Development, Where Does It Stand Today?," The Management Review, XLVII, No. 10 (October, 1958), p.8.

[5]Lyman W. Porter, "A Study of Perceived Need Satisfactions in Bottom and Middle Management Jobs," Journal of Applied Psychology, VL, No. 1 (February, 1961), pp. 6, 8.

to insure the junior manager a satisfying climate that encourages liberation of his latent executive qualities, how can present management retain sufficient control over company operations?

3. For ED to fulfill its purpose, it must have a good share of the attention, participation, and interest of top management; and it must be administered at an organizational level high enough to insure that its place in the affections of top management is obvious. But how can present executives do their jobs adequately and still take the time to develop subordinates? How can the organization insure that its managers actually observe the performance of their subordinates, so that they can realistically appraise their performance and counsel them concerning their strengths, weaknesses, and opportunities? And how can the organization insure that its present managers are sufficiently secure as individuals not to regard a well trained subordinate as a personal threat, and consequently not train him at all?[6]

4. Finally, what shall the organization's general ED philosophy be? Shall these people be trained to perform better in their present jobs, to be prepared for future promotion, or both? Any ED program even hinting at promotion as an end may cause some people to become more concerned with

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[6]Harry Levinson, "A Psychologist Looks at Executive Development," Harvard Business Review, XL, No. 5 (September-October, 1962), p. 73.

the future and its promotion potential than with doing a good job here and now, and may also result (or appear to result) in the selection and grooming of a few "crown princes", bringing morale problems for the rest of the group.

The program. An ED program will not only encounter problems but will in all probability be doomed from the start if:

1. It is not planned to meet known short, intermediate, and long range needs.

2. It is not given regular, objective evaluation to insure that it continues to meet these needs.

3. It is superimposed from on high in an effort to keep up with the corporate Joneses, and is consequently hastily developed by untrained and perhaps uninterested amateurs.[7]

4. It is unnaturally mechanistic, a rigid package of "training by the numbers". These often emphasize form rather than content, and may not remain dynamic. Or they may be built around some cherished technique or gimmick. As long as it is being used, management is deceived into thinking that effective ED action is being taken, when actually little of real value may be happening.[8]

5. It expects to achieve impossible results. While almost everyone in a management position may be expected to

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[7]Erwin K. Taylor, "Management Development at the Crossroads," Personnel, XXXVI, No. 2 (March-April, 1961), pp. 10-12.

[8]Robert K. Stolz, "Getting Back to Fundamentals in Executive Development," Personnel, XXX, No. 6 (May, 1954), pp. 434-444.

profit from sound ED, there are still only a very few who have the talent to take them to the top of the organization.[9]

6. It is not tied effectively to the working situation. It may embody the best in courses, lectures, etc.; but if it misses the most important element of ED, guided experience on the job, there will be very little transfer of learning from the classroom to the job.

The people. People have a general aversion to changing their ways of thinking and behaving, particularly in areas where they have some experience. Since development is synonymous with change, they have this same aversion to ED; although those recently hired from schools should not be so guilty of this as are their seniors in higher management positions. Engineers, however, have some peculiar characteristics which must be considered.

The engineer brings many useful attributes to his executive position. He is trained to be productive and to use initiative in the solution of problems involving making critical decisions. These qualities, when sharpened, may develop into real leadership. He has specialized knowledge and capabilities such as the ability to visualize things in three dimensions, to appreciate spacial relations, and to think in an orderly fashion in mathematical and other abstract terms. He has a questioning mind, trained to ask "why" and then to seek for answers through observation, ob-

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[9]Robert N. McMurry, "Man-Hunt for Top Executives," Harvard Business Review, XXXII, No. 1 (January-February, 1954), pp. 46-62.

jective analysis, and judgment of facts. He is deeply interested in his engineering work, which he has been taught to pursue with an abiding sense of professional ethics. And the engineering temperament has been assessed as neither introverted nor extroverted, but a happy medium that enables him to establish rapport with a wide variety of personality types.[10]

These assets notwithstanding, the engineer must overcome many of his peculiar problems if he is to develop into an executive. As a class, he is singularly poor at communicating, which is a primary executive requirement. Used to dealing in absolutes, he tends to underestimate the values of intangible things such as attitudes, emotions, traditions, and prejudices. In short, he is not trained to appreciate, deal with, and exercise judgement in the human elements of management. For these reasons he may lack humility, being rather self-satisfied with the general susceptibility of all problems to solution by the scientific method.[11] He may be too good at engineering, so consumed with technical details that he has no time left over to manage. And he is too slow in making operating decisions. He is prone to want more data, to want more time for further study and analysis, and to want

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[10]William B. Given, Jr., "The Engineer Goes Into Management," Harvard Business Review, XXXIII, No. 1 (January-February, 1955), pp. 44,50.

[11]James C. Stephens, and Gilbert Chester Jacobus, "The Engineer Manager: Training the Technician for Executive Responsibilities," Personnel, XXX, No. 5 (March, 1954), pp. 376-377.

to derive the perfect solution rather than accepting the time constraints of the business environment and settling for a satisfactory solution. He may be a lone wolf, used to attacking and solving problems by himself. This compulsion to individual victory over technical problems may result in exclusion of outside (non-engineering) interests, making him a rather narrow person. He may also lack imagination. For all these reasons, "It is extraordinarily difficult to make a generalist out of a specialist".[12]

Executive Development Prerequisites

Certainly industry faces an impressive array of problems with regard to ED for the engineer; but to make ED successful, organizations must bring much more to the cause than a knowledge of the problems to be faced. They must also know their training needs and training goals, know what constitutes an effective ED program, and know the organizational environment that is necessary if ED is to produce its desired results.[13]

Knowledge of training needs. Obviously the first step is to determine training needs. It is one thing to recognize

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[12]Robert N. McMurry, "Man-Hunt for Top Executives," Harvard Business Review, XXXII, No. 1 (January-February, 1954), pp. 58-59.

[13]Thomas H. Johnson, Jr., "Let's Get Management Development Back on the Track," The Management Review, XLIX, No. 6 (June, 1960), p. 18.

problem areas possibly indicating the need for training, but quite another to obtain conclusive evidence that such a need exists.[14] This may require making surveys, conducting interviews and group discussions, looking over reported operational problems, reviewing job descriptions, appraising performance, or just being generally observant. Once this has been done, the problems unearthed must be analyzed to determine which portions may be solved by training; and these training needs must be traced to specific groups of people. Then the needs of the individuals within these groups may be determined and generally categorized for action as:

1. Knowledge--for the one who doesn't know.

2. Skill--for the one who knows but can't do.

3. Attitudes--for the one who doesn't care.

4. Habits--for the one who knows, can do, and cares, but hasn't made the desired behavior a part of his daily life.

5. Understanding--for the one who needs the big picture concerning total organizational goals and inter-departmental relationships.[15]

Knowledge of training goals. In order properly to utilize its knowledge of existing training needs, the organiza-

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[14]B. B. Jackson and A. C. Mac Kinney, "Methods of Determining Training Needs," Personnel, XXXVI, No. 5 (September-October, 1959), pp. 60, 63-64.

[15]George S. Odiorne, "Pin-Point Your Training Needs," Personnel Journal, XXXV, No. 2 (June, 1956), pp. 59-60.

tion must have an idea of what the development program is expected to produce. Since the goal of ED is to upgrade executive competence, there must be a clear perception of what constitutes executive competence.[16] Each organization will doubtlessly have some of its own detailed specifications; but there is general, industry-wide agreement concerning the ideal executive--what he should be, what he should know, and what he should do.

What the ideal executive should be.

1. The ideal executive should be technically competent, skillfully and proficiently plying his profession.[17] He is an active, dynamic innovator. Technical competence also includes a definite facility with language.

2. The ideal executive should be intellectually broad. This begins with above average mental ability, stretched by continual participation in the processes of self-development and intellectual activity which stimulate growth, progress, and change.[18] Also involved are ever-widening personal interests, exercised by a broad reading program and

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[16]Willard E. Bennet, "Master Plan for Management Development," Harvard Business Review, XXXIV, No. 3 (May-June), p.72.

[17]Robert N. Hilkert, "Achieving Competence as the Boss," Personnel Journal, XXXVII, No. 4 (September, 1959), p. 133.

[18]Kenneth R. Andrews, "Is Management Training Effective? 2. Measurement, Objectives, and Policy," Harvard Business Review, XXXV, No. 2 (March-April, 1957), p. 71.

participation in activities that are outside his usual organizational purvue. The end result is an independent thinker, neither an over-conformist nor an iconoclast, with maturity of character and judgement.

3. The ideal executive should be honorable, ethical, moral, and fair. He maintains high personal standards of basic integrity, remembering and keeping promises, not abusing privileges, and subordinating personal interests to those of his organization and the public.[19]

4. The ideal executive should be perceptive, able to sense what is really fundamental to an issue. He has the ability to recognize the situation where an exception should be made, and has the courage and imagination to make the exception and then return to normal operating policy. He has the vision to recognize broad interfunctional and interorganizational relationships; and he is sensitive to all areas of potential improvement--in himself, in others, and in his organization.[20]

5. The ideal executive should be mentally and emotionally mature.[21] A battery of tests recently given to

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[19]George Albert Smith, Jr., "Questions the Business Leader Should Ask Himself," Harvard Business Review, XXXIV, No. 2 (March-April, 1956), p. 56.

[20]Robert L. Katz, "Skills of an Effective Administrator," Harvard Business Review, XXXIII, No. 1 (January-February, 1955), p. 34.

[21]Morris J. Pickens, "Executive Development - The Personnel Man's Challenge," Personnel Journal, XXX, No. 7 (December, 1951), pp. 257-258.

seventy-six managers at all levels of an organiation resulted in the researchers' stating, "we can describe the successful manager in this organization as an individual who shows a great deal of emotional strength;".[22] He is well rounded, well adjusted to life, and highly motivated. He is a self-starter who is instinctively responsible, consciously a part of management, and self-confident in the best sense of the term--in command of the situation.

6. The ideal executive is socially oriented, with a concern for the public interest.[23] He has a great appreciation for human relationships. He is a listener and an asker of questions, helping others to understand both their own feelings as well as the facts about a situation. He is sensitive to the needs and motivations of others so that he is able to judge possible reactions to, and results from, his own actions.[24]

In summation, he "must ideally combine in himself the initiative and willingness of the entrepreneur to take risks with the judgement and administrative skills of a good

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[22]John A. Hicks and Joics B. Stone, "The Identification of Traits Related to Managerial Success," Journal of Applied Psychology, VLI, No. 6 (December, 1962), p. 431.

[23]Robert N. Hilkert, "Achieving Competence as the Boss, Part II," Personnel Journal, XXXVII, No. 4 (September, 1959), p. 133.

[24]Robert L. Katz, "Skills of an Effective Administrator," Harvard Business Review, XXXIII, No. 1 (January-February, 1955), pp. 34-35.

manager".[25]

What the ideal executive should know. This executive begins by knowing himself.[26] Self-awareness, the knowledge of his own beliefs, convictions, values, perceptions, prejudices, needs, motivations, strengths, weaknesses, attitudes, and assumptions, is the foundation for an appreciation for and tolerance of other people and their varying positions on controversial matters. The ideal executive also knows his people. He is conversant with the problems of organized human associations, appreciating the role of human relations in the performance and job satisfactions of his subordinates,[27] working effectively with them as a group, and building cooperative effort within the group. He has a feel for how they learn, receive information, evaluate, reach decisions, and communicate,[28] so that he understands what they really mean by their words and behavior, how to encourage free communi-

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[25]Robert N. McMurry, "Man-Hunt for Top Executives," Harvard Business Review, XXXII, No. 1 (January-February, 1954), p. 49.

[26]Chris Argyris, "Top Management Dilemma: Company Needs vs. Individual Development," Personnel, XXXII, No. 2 (September, 1955), pp. 123-134; and Michael G. Blansfield, "Manager Training: Much Can Well be Done in Groups," Personnel Journal, XXXVII, No. 1 (May, 1958), pp. 14-15.

[27]Alfred P. Wiora and John W. Trago, "An Experiment in Management Development," Personnel, XXXVIII, No. 3 (May-June, 1961), p. 26.

[28]David Thomas, "The Case for Planned Development," Personnel, XXXVIII, No. 2 (March-April, 1961), p. 13.

cation from his subordinates both horizontally and vertically, and how to instruct them, communicating his real meaning in the best way for them to understand. This knowledge also helps him make accurate observations of human behavior. The ideal executive knows his job. He recognizes the real opportunities inherent in his present job as well as the ways best to prepare himself for future opportunities. He relates sound management principles to his job experience, and maintains the vision to recognize and initiate new developments in his field, to analyze and predict labor-management trends, and to engage in meaningful cost and business analysis. And the ideal executive knows his organization, its policies, procedures, goals, and operating climate. He has an understanding of its total economic, political, and social environment so that he can relate this total environment to the decisions he makes, and vice versa.[29]

What the ideal executive should do. The ideal executive plans work to be accomplished. He plans in the broadest sense, formulating policy and long range strategy. He sees beyond the obvious to the really germain problems and issues at hand, distinguishing between causes and symptoms.[30] He anticipates ways to lead the field, to innovate; and he has a

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[29]G. L. Bach, "Where Do Executives Come From?," Personnel, XXIX, No. 1 (July, 1952), p. 51.

[30]Frederic D. Randall, "Stimulate Your Executives to Think Creatively," Harvard Business Review, XXXIII, No. 4 (July-August, 1955), p. 122.

finely developed sense of timing. (He also plans realizable goals for his own self-development.) Based on these plans, he gathers information. This is also a broad function, and involves the constant analysis of the tasks necessary to meet organizational goals as well as the observation, objective analysis, and interpretation of social, political, and economic trends. He integrates all known pertinent information, reflects on and sizes up the situation, recognizes the possible solutions, and verifies his proposed solution whenever possible. He then makes a satisfactory action decision. It will probably not be the perfect decision; but it must be as sound as it can be, based on the best available information. And it must be timely. The executive communicates his decision to those who are responsible for carrying it out, phrasing and delivering it so effectively that it is received and understood. In the process of assigning jobs to people, he insures that he matches the jobs and people most advantageously for both. With action thus initiated, he maintains the activities necessary to carry the decision through to completion. He works easily and effectively with his people, motivating them to work toward their assigned goals. He encourages and bolsters employee confidence in himself, in themselves, and in the worth of the organization and its goals, always remembering to show sincere appreciation for employee efforts, which is perhaps his most effective method of compensation. In seeing that assigned goals are successfully

completed, the executive remains flexible enough to think effectively and independently in handling new and unforeseen situations, to learn from experience, to admit and correct his mistakes, and to be alert to new ideas and ways of doing things.[31] And he evaluates the effectiveness of employee efforts, probably the most difficult (but important) of his management duties, discussing their jobs, responsibilities, and problems openly, freely, and honestly.

Knowledge of training programs. Having the knowledge of training needs (before) and a clear perception of what the end product of training should be (after), management still must gather information on the most effective programs to reach the training goals (during). The ideal ED program is one that is properly planned, organized, executed, and policed.

Proper planning and organization. To meet all known needs, management must do the original planning and organizing, although eventually the trainees themselves should be able to assume parts of these functions as their needs become clearer to them. There is a place for the staff specialist in this phase, but the guidance of the line managers must shape the ED program so that it trains in the things that

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[31]G. L. Bach, "Where Do Executives Come From?," Personnel, XXIX, No. 1 (July, 1952), p. 52; and Michael G. Blansfield, "Manager Training: Much Can Well be Done in Groups," Personnel Journal, XXXVII, No. 1 (May, 1958), p. 15.

executives should actually be, know, and do.[32] The experiences most effective for ED must be determined, and the trainees must be sure to get these experiences. The program must be planned to run along with the climate and spirit of the organization, oriented toward its goals, methods, policies, and needs; and planning must be fairly long range in order to insure that training goals remain consistent and integrated.[33]

Proper execution. To have maximum impact, the program length must be suited to the course content; and the faculty must be well qualified, competent, and experienced. The program must be tailor-made for the individual trainee, considering his talents and abilities, his aspirations, his individual strengths and weaknesses, and his need to participate.[34] An interview investigating his concept of how the organization is structured, the responsibilities of the various jobs to which he aspires, the steps and timing he feels are necessary to reach his goals, and his own evaluation of his experience and training in the areas necessary to reach each step and progress to the next has been found to give a good measure of

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[32]Thomas H. Johnson, Jr., "Let's Get Management Development Back on the Track," The Management Review, XLIX, No. 6 (June, 1960), p. 22.

[33]Edward N. Hay, "Your Boss Is Your Training Director," Personnel Journal, XXXV, No. 6 (November, 1956), p. 221.

[34]Robert K. Stolz, "Management Development, Where Does It Stand Today?," The Management Review, XLVII, No. 10 (October, 1958), p. 7; and A. H. Houseknecht, "Who Needs Training - And Why," Personnel, XXVL, No. 4 (January, 1950), p. 283.

aspirations. In assessing trainee strengths and weaknesses, consideration must be given to his mental capacity, his degree of imagination and motivation, and his emotional balance which will determine whether or not he will be able to withstand the pressures of the executive position and to adjust harmoniously to the environment in which he must function.[35] Since the value of ED is directly proportional to the amount of personal participation, it is most important that the trainee be highly motivated. The material and its delivery must not be on such a low level that it insults his intelligence; and a sufficient amount of outside personal effort and time (homework, if you will) must be required to challenge him, perhaps ten to fifteen hours per week.[36] He must be stimulated to seek and apply truth and insight, rather than collect the wise conclusions of others, by a system of rewards and incentives[37] related to his desire to learn, to continue to learn, and to apply what he has learned. And finally, the program must remain flexible in objectives, procedures, and content, so that it can continue to meet

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[35]Milton L. Rock, and John J. Grela, "Charting a Realistic Course for Executive Development." Personnel, XXX, No. 5 (March, 1954), pp. 368-369, 371-373.

[36]F. Gordon Barry and C. G. Coleman, Jr., "Tougher Program for Management Training," Harvard Business Review, XXXVI, No. 6 (November-December, 1958), p. 125.

[37]Bernard J. Muller-Thym and Melvin E. Salverson, "Developing Executives for Business Leadership," Personnel, XXV, No. 4 (January, 1949), pp. 251-252.

the needs of a developing subordinate. In view of the very personal and individual requirements of ED, it is plain why industry has centered training programs around the line manager rather than the staff "expert". With the boss and supervised on-the-job training at the center, the processes of coaching, performance appraisal, and goal setting can give ED the necessary individual tailoring to fit each man.

Proper policing. The program must receive continuing critical review to insure that:

1. It receives the necessary proportion of present management efforts, abilities, and interests.

2. Its effects saturate into all management levels within the organization.

3. There is a continuing connection between the training and working environments.

4. Urgent demands for functional specialties do not crowd the system.

5. The content does not become dehydrated, leaving only form, as when things which began as innovations deteriorate into traditions.

6. Organizational and individual requirements are being met. Standards for measuring the results of ED must be developed and applied. While measurement in concrete terms may be quite difficult, management demands more than just a vague feeling about the results of such a program.

7. And at least one person in the organization,

the higher the better, has a sufficiently intense interest in the ED program to act as its defender, shepherd, expediter, and modifier as necessary.

Knowledge of Organizational Atmosphere. Even with a fairly complete knowledge of training needs, goals, and effective programs, the organization that would make ED a continually meaningful experience, with the maximum in carry-over between learning and practice, must take great pains to insure that its operating atmosphere is properly permissive.[38] The term "permissive" has gathered unhappy connotations in the minds of managers during the past ten years, being considered to mean the sacrificing of organizational goals and management prerogatives on the alter of the "one big happy family". This is not what is meant here. A permissive climate from the ED point of view is one in which the trainee is treated as an individual human being fairly and openly; given the opportunity to participate in a meaningful way; and stimulated, encouraged, and allowed to learn and then to apply what he has learned. Much effort by good top management is necessary to insure the constant availability of opportunities for subordinates to develop. It is necessary and rewarding effort, however, because the results of a recent study of 186 supervisors indicated that "job attitudes of managers and

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[38] C. Wilson Randle, "Building Tomorrow's Management Today," The Management Review, XLVI, No. 1 (January, 1957), pp. 85-87.

professional people are determined more by opportunities for growth, achievement, and responsibility than by other aspects of the job".[39]

Good top management. Present management should consistently present a good personal example of high standards of conduct and performance, since the junior's conception of proper executive performance is based largely on what he observes in his superiors.[40] It is the responsibility of the seniors to establish the proper relationship with their subordinates on the basis of personal contact and good communications. They must build team spirit by stimulating, encouraging, and supporting subordinates, and by showing confidence in them. This has been well expressed as the willingness to gamble on people.[41] They must show a sincere interest in seeing their subordinates develop by continually letting them know where they stand; and they must select men for advancement in authority, responsibility, and compensation on the basis of honestly evaluated performance. This must include the willingness to face up to managerial incompetence as well

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[39]Roger Harrison, "Sources of Variation in Managers' Job Attitudes," Personnel Psychology, XIII, No. 4 (Winter, 1960), p. 434.

[40]Bernard J. Muller-Thym and Melvin E. Salverson, "Developing Executives for Business Leadership," Personnel, XXV, No. 4 (January, 1949), p. 252.

[41]William B. Given, Jr., "Reaching Out in Management," Harvard Business Review, XXX, No. 2 (March-April, 1952), p. 36.

as competence. Good managers have learned from hard experience that it is not fair, right, or possible to give everyone the same treatment.

Opportunity to develop. To remain opportunity oriented, the organization must be continually appraised. Obstacles to ED must be identified and removed, and effective ED practices must be identified and practiced. The organization must have a clear structure so that each developing executive can see how he fits into the entire organization. This shows him the areas in which he is comparatively free to operate and with what degree of independence, authority, and responsibility for required results.[42] At the operating level, the work situation for each man must include opportunities for him:

1. To tackle a necessary, challenging job offering a real sense of accomplishment and stretching his abilities.

2. To assume responsibilities, to be accountable for results, and to have the authority necessary to accomplish these results.

3. To be comparatively free to experiment and innovate without being too rigidly surrounded by rules, regulations, policies, procedures, and inspectors.

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[42]Glenn D. Clark, "Creating the Conditions for Growth on the Job," Personnel, XXXVIII, No. 1 (January-February, 1961), p. 11.

4. To be allowed (and really expected) to take risks and to make some mistakes.[43]

5. To have daily dynamic learning and growing experiences with new tasks, new colleagues, and new situations.[44]

6. To cross-fertilize ideas by having free access to all organization personnel with their different ideas, personalities, backgrounds, educations, and imaginations.[45]

7. To have a proper emotional atmosphere in which information is available, work pressures are not unbearable, controls are not too rigid, and thinking is not conditional and rut-bound.

8. To be a part of the whole organization, not just a member of one department, encouraged to look for ways to contribute toward the solution of problems wherever he may notice them.[46]

9. To see working experiences reinforce, rather than dampen, ED.

10. To advance on the basis of personal merit know-

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[43]Michael G. Blansfield, "Managers in Wonderland, Confusions and Contradictions in Executive Development," The Management Review, XLIX, No. 10 (October, 1960), pp. 76-77.

[44]David Thomas, "The Case for Planned Development," Personnel, XXXVIII, No. 2 (March-April, 1961), pp. 14-15.

[45]George Albert Smith, Jr., "Questions the Business Leader Should Ask Himself," Harvard Business Review, XXXIV, No. 2 (March-April, 1956), pp. 54-55.

[46]William B. Given, Jr., "Reaching Out in Management," Harvard Business Review, XXX, No. 2 (March-April, 1952), p. 38.

ing both the organizational promotion schedules and policies and the availability of higher jobs.

Executive Trainee Prerequisites.

The organization, however, does not bear the whole responsibility for the success of ED. The trainee must also make his own contributions, mainly in the form of abilities and potential. He must contribute the ability to learn and develop. He must have the necessary mental capacity, activated by an open mind, general receptivity, and an educatable attitude. He must also show executive potential by having an interest in his own growth and development, a willingness to participate in learning experiences, healthy ambition which includes both the desire for promotion to more responsible positions and the drive and enthusiasm to be promotable, and a pride in accomplishment--in your organization.[47]

These attributes will overcome the problems imposed by the narrowness of former engineering education and experience. In fact, the narrower the former experience, the greater should be the impact of ED.[48]

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[47]Michael G. Blansfield, "The Untimely Passing of Management Development," Personnel Journal, XXXIX, No. 10 (March, 1961), pp. 406-407; and Ingo Ingenohl, "Blueprint for Successful Management Development Policy,: Personnel Journal, XLI, No. 10 (November, 1962, p. 491.

[48]Kenneth R. Andrews, "Is Management Training Effective? 1. Evaluation by Managers and Instructors," Harvard Business Review, XXXV, No. 1 (January-February, 1957), p. 87.

Executive Development Programs

With all the "givens" in the preceding discussion, industry has still had to determine actual methods and tools to get ED across. Successful programs have been developed to include the organization, the educational institution, and the social environment; and the ED potential of each of these areas of human experience has been utilized.[49]

In-house instruction. In-house instruction is usually in the form of classroom courses and seminars covering such topics as the fundamentals of supervision, administration, and management, organization policies, the job, current developments, particular organizational problems and their solutions, new methods and products, conference leadership, human relations, and perhaps other topics suggested by the trainees themselves. The usual tools for this type of instruction include lectures (ordinarily used sparingly), case studies (made quite realistic if they are built around actual organization problems with the supervisor who faced and solved the problem acting as discussion leader), films (which can be used in conjunction with almost all the other tools), the incident process (a boiled-down case study), role playing (a case study on wheels), buzz sessions (small discussion groups), and brainstorming. The number, variety, and combina-

[49]Willard E. Bennett, "The Lecture as a Management Training Technique," Personnel, XXXII, No. 6 (May, 1956), p. 80.

tions of these tools is practically limitless; but they must be proportioned into the mix calculated best to meet the needs of the particular situation.

Three of the more interesting training techniques are noted. The Bendix Radio Division of Bendix Aviation Corporation has developed a system called simulated job rotation, in which the trainees assume the roles of different executives and then approach and solve problems from these points of view.[50] At the Naval Ordnance Test Station, Pasadena, California, having recently trained and qualified junior engineers train the new trainees has been particularly successful. Better rapport is possible between these two groups of comparable rank, and recent trainees are a more sympathetic group of instructors for having grappled so shortly before with the problems of the training program.[51] And using vertically rather than horizontally structured training groups, training everyone from the top down simultaneously and maintaining the normal organizational setting (rank structure) throughout the sometimes rather artificial training situation, has been suggested by the Human Relations Research Group, Institute of

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[50]F. Gordon Barry, and C. G. Coleman, Jr., "Tougher Program for Management Training," Harvard Business Review, XXXVI, No. 6 (November-December, 1958), p. 118.

[51]Jack W. Hoyt, and Bernard Silver, "'Training by the Trained' Develops Junior Professionals," Personnel Journal, XXXVI, No. 4 (September, 1957), p. 126.

Industrial Relations and School of Business Administration, University of California, Los Angeles.[52]

On-the-job training. This is the most fertile training ground of all;[53] but two programs must be associated with on-the-job training if it is to have its maximum effect. These are regularly scheduled performance appraisals and interviews, and coaching by the supervisor.[54] It is through these that the subordinate and superior both cooperate and participate in evaluating progress versus goals, assessing further development needs and goals, planning the direction that this further development should take, and determining how the organization can assist the trainee in working toward the accomplishment of these goals. They develop the trainee's sense of participation and provide leadership and interest by the organization. But primarily they tailor the training to the peculiar needs of the individual trainee.[55]

Usual on-the-job training devices are job rotation, com-

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[52]Robert Tannenbaum, Verne Kallejian, and Irving R. Weschler, "Training Managers for Leadership," Personnel, XXX, No. 4 (January, 1954), pp. 255-256.

[53]A. D. Kellner, "On-Job Training - Fertile Ground for Managers," Personnel Journal, XL, No. 7 (December, 1961), pp. 294-295.

[54]Erwin K. Taylor, "Management Development at the Crossroads," Personnel, XXXVI, No. 2 (March-April, 1959), p. 14.

[55]A. V. Feigenbaum, and H. W. Tulloch, "'Management Apprentice-ships', An Executive Development Program," Personnel, XVI, No. 2 (September, 1949), pp. 77-78.

mittee projects to study and solve a particular problem, and other special temporary assignments.

Outside activities. The most generally used extra-organizational ED activities are:

1. Retreats and conferences, often held in a semi-vacation atmosphere. These gain their impact as much through broadening social contacts in an intellectually and physically invigorating environment as from the courses of instruction and discussion, which may be conducted either by organizational talent of by imported "experts" from educational institutions or other organizations.

2. Courses in local business schools. These may be partially or completely financed by the organization, and may be time-off day school programs or own-time night school or correspondence courses.

3. Informal contact with the leaders of the organization. A semi-social situation allows the leisurely, meaningful discussion of broader organizational problems or economy-wide problems.

4. Planned reading programs to stimulate further interest and study in human relations, supervisory and job skills, the humanities, and the arts.

5. Participation in the functions and activities of clubs, organizations, civic and technical societies, and other worthwhile outside groups.

Executive Development Results

This completes the cycle of this portion of the discussion, from the decision whether or not to become involved with ED in the first place to the contemplation of possible results from a functioning program. And industry has found that there are indeed measurable results from properly conducted ED, for the individual trainee, for his work group, and for the entire organization.

For the trainee. The individual trainee may be expected to have a more human orientation, to be an improved leader and supervisor, and to have a new self-confidence in handling his people and new situations. He should be stimulated to do better work. He should have an increased awareness of himself and his strengths, weaknesses, and potentials; of his job as a manager and its true complexity; and of his influence on his work group and their interpersonal relationships. But primarily he should have a point of view that has been sufficiently broadened to make possible the transition from engineer to manager.[56]

For the work group. The work group should have better understanding between superiors and subordinates, better com-

[56]Kenneth R. Andrews, "Is Management Training Effective? 1. Evaluation by Managers and Instructors," Harvard Business Review, XXXV, No. 1 (January-February, 1957), pp. 86-88, 91.

munications in all directions, and improved interpersonal behavior.[57]

For the organization. The organization with well developing junior executives should expect to find greater cohesion in the management team and improved inter-departmental cooperation. It should find that some of its operating problems have been pin-pointed, such as the need for better personnel policies or an improved organization structure. It should find itself with greater reserve strength in the management ranks, both from the development of its own executive resources and from the attraction of other good men to the organization. And it should experience increased flexibility due to increased member versatility.[58]

II. NAVY JUNIOR OFFICER DEVELOPMENT POLICY

Historically the Navy has been vitally concerned about and actively committed to a well conceived and defined program of professional development for its junior officers. The general policy in this area is found in U. S. Navy Regulations,

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[57]Walter R. Mahler, "Evaluation of Management Development Programs," Personnel, XXX, No. 2 (September, 1953), p. 117.

[58]Bernard J. Muller-Thym, and Melvin E. Salverson, "Developing Executives for Business Leadership," Personnel, XXV, No. 4 (January, 1949), pp. 259-260; and "Training Understudies" (Cleveland Electric Illuminating Company Training Manual), Personnel, XXVIII, No. 5 (March, 1952), pp. 409-410.

which state that:

The commanding officer shall:

1. Endeavor to increase the specialized and general professional knowledge of the personnel under his command by the frequent conduct of drills, classes, and instruction, and by the utilization of appropriate fleet and service schools.

2. Encourage and provide assistance and facilities to the personnel under his command who seek to further their education in professional or other subjects.

3. Require those lieutenants (junior grade) and first lieutenants who have less than two years commissioned or warrant service, and all ensigns and second lieutenants:

(a) To comply with the provisions prescribed for their instruction by the Chief of Naval Personnel, the Commandant of the Marine Corps, or the chiefs of other appropriate bureaus.

(b) To keep journals, to attend classes, and to receive appropriate practical instruction, as the commanding officer deems advisable.

4. Detail the officers referred to in paragraph 3 of this article to as many duties successively as practicable. This rotation of duties should be completed during the first two years of the officer's commissioned service. The commanding officer shall indicate on the fitness report of each such officer the duties to which he has been assigned, the total period of assignment, and the degree of qualification in such duties.

5. Designate a senior officer or officers to act as advisers to the officers referred to in paragraph 3 of this article. These senior officers shall assist such junior officers to a proper understanding of their responsibilities and duties, and shall endeavor to cultivate in them officer-like qualities, a sense of loyalty and honor, and an appreciation of naval customs and professional ethics.[59]

In keeping with the normal military situation in which

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[59] United States Navy Regulations, 1948, current through Change 2 of 28 May 1952, Section 0710, p. 83.

the commanding officer enunciates policy, the executive officer disseminates and enforces policy, and the department head executes policy, U. S. Navy Regulations go on to state that:

> The executive officer, subject to the orders of the commanding officer and assisted by the appropriate subordinate, shall:
>
> 4. Supervise and coordinate the work, exercises, training, and education of the personnel of the command.[60]

and

> The head of a department, subject to the orders of the commanding officer, shall:
>
> 4. Be responsible for the effectiveness of the department, and to this end he shall plan, direct, and supervise the work and training of personnel within the department.[61]

This general Navy policy compares extremely well with the principles for effective ED developed in industry, in that:

1. Top management has the direct responsibility for the development of juniors; although some program planning is done by staff specialists.

2. Both specialized (technical) and general (leadership) knowledge and skills are emphasized.

3. Development activities are planned, continuously utilized, and carried on both on the job and in the classroom.

4. Those juniors who show greater than average interest in their own development are given additional encouragement

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[60]Ibid., Section 0803, p. 107.

[61]Ibid., Section 0903, p. 111.

and assistance.

5. A definite amount of outside work is required of the trainees.

6. On-the-job training is accomplished primarily through rotation into a series of meaningful jobs, all of which are obviously contributory to the well-being of the entire organization.

7. Trainee performance is formally appraised at regular intervals by his entire chain of command.

8. Individual coaching by one or several senior officers insures a tailor-made development pattern for each junior officer.

While these development principles were doubtlessly formulated with the junior line officer and the needs of the operating, sea-going navy in mind, they have been recognized as none the less valid for the professional development of the junior officer who is a staff specialist. The Bureau of Yards and Docks has committed itself to these principles by stating,

> The Civil Engineer Corps is not separate and apart but an integral part of the Navy Officer Corps. CEC's are Naval officers first and professional engineers second.[62]

Of course the actual training of the junior officers in the Corps must center around their specialized mission, and this

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[62]Department of the Navy, Bureau of Yards and Docks, Policy Reference Book, NAVDOCKS P-329, 11 April 1962, Paragraph 1.2.1, p. 1-3.

is accomplished by two primary means:

> 1. All officers upon entry into the Corps for active duty will receive indoctrination at the Civil Engineer Corps Officers' School. Where appropriate, specialized courses in areas of interest to the Corps and the Bureau but not available elsewhere will be provided at CECOS.[63]

This school, in its present eight-week basic course, introduces the new junior officers to some of the considerations, methods, and problems of management within the context of the Navy shore establishment; but time contraints preclude the study of any of these things in depth.

> 2. On-the-job and management training will be provided officers to fit them for the performance of their duties as Naval military engineers. Wherever practicable they will be afforded the opportunity to obtain management training.[64]

Since present and projected future policy with regard to formal management training is that no CEC officer below the rank of lieutenant is eligible for such, on-the-job training is the only type to which junior officers are exposed.

III. CEC JUNIOR OFFICER DEVELOPMENT

While the principles for junior officer professional development as stated by policy documents have been examined and found to be excellant, problems have arisen concerning the embodiment of these principles into practices calculated to achieve desired results. These problems become evident as official program instructions are studied.

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[63]Ibid., Paragraph 1.2.6, P. 1-5.

[64]Ibid., Paragraph 1.2.6.1, pp. 1-5-1-6.

Bureau of Yards and Docks Manual

This is the basic instruction manual for the Corps, and states as its primary training premise that:

> Training of naval personnel is accomplished by formal training courses and by performance on the job. Formal training courses are necessary to prepare individuals for assignments requiring greater skills and responsibilities, but much of an individual's training must be accomplished while he is engaged in his regular duties.[65]

This necessary emphasis on on-the-job training makes the billet to which the junior officer is assigned the most important item in his development. With regard to this, the Manual goes on to state:

> 3. Basic Considerations. There are two important considerations in the assignment of military personnel to duty: (a) the necessity of providing qualified personnel for the authorized billets and (b) the desirability of providing opportunity for the development of the professional and personal capabilities of the individuals. In case the two considerations are incompatible, the first must govern in order to satisfy the needs of the service.
>
> 4. Rotation. Rotation of personnel among billets is necessary (a) to provide for equitable assignment of personnel to those that are more desirable from the standpoint of location, type of duty, living conditions, and other personal considerations and (b) to provide each individual with the diversity of experience necessary to prepare him for duties with broad, general responsibilities.[66]

It is at this point that the primary problem of junior officer utilization, and consequently development, becomes

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[65]Department of the Navy, Bureau of Yards and Docks, Bureau of Yards and Docks Manual, 1 January 1954, Paragraph 4C4.01, pp. 4-8-4-9.

[66]Ibid., Paragraph 4C5.01, pp 4-11.

apparent. The duties of all officers in public works activities are executive, managerial, and administrative. The junior officer has qualifications that are almost entirely technical, derived from the engineering discipline in which he has been educated. Because he is not qualified, the junior officer cannot be assigned to public works billets (in accordance with stated Bureau of Yards and Docks policy); but because he cannot be assigned or rotated to public works duties, the junior officer is denied the only method by which he is able to become qualified for such duties. While a strict interpretation of the policy makes this insoluble riddle appear to be reasonable, the facts of life are that over half of the junior officers presently in the Corps are assigned public works duties, qualified or not. The inconsistency is obvious, and has not been removed by the more detailed instructions promulgated subsequently.

Organization and Staffing for Public Works Departments (NAVDOCKS TP-Ad-12)

This publication began a series of instruction manuals generally covering the items outlined in the foreword:

> This publication presents recommended standard organizational and staffing patterns for Public Works Departments of shore activities of the Navy.
>
> Part A defines technical and management control of the Bureau of Yards and Docks and the basic philosophy of this Bureau in regard to the authority and responsibility that should be found at each component level of Public Works Departments. It discusses, also, personnel requirements and the relationship of such requirements

to the organizational structure.

> Part B lists the principles of organization and outlines a basic recommended organization for Public Works Departments. Requirements for military billets are also discussed.
>
> Part C presents the duties and responsibilities of the Public Works Officer and his assistants, as well as the functions and responsibilities of the office divisions and operating divisions, and of their organizational components.[67]

The military billets prescribed included those of the public works officer, assistant public works officer, shops engineer, maintenance officer, utilities officer, and transportation officer, the last three of these ordinarily being junior officers. Of primary interest to this study is the fact that the very detailed descriptions of the duties of the public works officer and his principal assistants contained not one statement, direct or indirect, concerning their responsibilities for the training and professional development of the junior officers assigned to them. In discussing the billet of shops engineer, the statement was made that:

> To assist him in the performance of his duties and to provide operational experience to the officers concerned, the Shops Engineer has under his immediate direction, one to three division officers who are designated as Maintenance Officer, Utilities Officer, and/or Transportation Officer. The Bureau of Yards and Docks recommends that these officers function in a line capacity and that the Shops Engineer carry out his duties and responsibilities through his division officers.[68]

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[67]Department of the Navy, Bureau of Yards and Docks, Organization and Staffing for Public Works Departments, Technical Publication NAVDOCKS TP-Ad-12, 15 November 1954, p. iii.

[68]Ibid., Paragraph C3.02, p. 28.

Again the inconsistency referenced earlier appeared. The shops engineer found that his untrained and unqualified junior officer assistants were unable to assist him in the performance of his duties. In fact, they added materially to his duties, giving him not only his normal workload from the operating divisions but also the job of training one to three junior officers. The press of operating requirements, the complaints of senior civilian personnel in the operating divisions, the lack of specific responsibility for training, and little if any idea concerning how training should be carried out made it usually expedient for the busy shops engineer to remove his junior officer assistants from their recommended line positions of direct authority and responsibility and to place them in staff positions. While there is nothing inherently deadly about the staff position of "assistant to" from the point of view of development, it was most unusual when the shops engineer who found himself too busy to devote himself to the task of training his line assistants proved to be any more imaginative in the use of his staff assistants. In the former situation the junior officer was interposed in the line of executive action, and consequently considerable effort on the parts of both himself and the shops engineer was required to develop the trainee so that his position would not become a complete bottleneck. As a staff assistant the junior officer was able by special assignments, studies, and personal interest to accumulate information about the work-

ings of his public works department; but he was unable to gain the experience he really needed to qualify for the positions for which he was supposedly being trained because of being separated from the management functions of the organization. Too often, instead of being placed where he could do the most good for himself and his department, he was placed where he could do the least harm. Many good reasons, good from the point of view of the public works officer whose primary interest was the most efficient discharging of his operational duties, were given for this treatment of the junior officers; but those most often heard were:

1. "You can't take young, untrained officers and place them directly over older, more experienced civilian supervisors and tradesmen." and

2. "Budgets are so tight that we can't afford to let the junior officers make the mistakes of which they are potentially able as line division officers."

These statements, instead of being recognized by his superiors as the compelling reasons requiring a dedicated and effective junior officer development effort, were used to insure the junior officer only greatly reduced development opportunities and incentives. And this very poor development climate was doubtlessly greatly responsible for the large percentage of junior officers who left the Corps for more fruitful fields of civilian endeavor.

A proposed but never promulgated change to this organi-

zation and staffing manual sought to remedy this situation by changing the division officer billets to:

> i. Officer Development Billets. Officer Development billets have been established to provide on-the-job practical training for junior officers. This training is essential to provide the practical experience required by the junior officers to prepare them for the leadership responsibilities they must assume when they are assigned to more senior billets. Flexibility of assignment has been provided to the Public Works Officer so he can utilize the officers' abilities to the maximum and at the same time provide the junior officer with maximum experience, based on the officers' capabilities and the local situation.[69]

In defining the duties associated with each military billet, the revised manual explained the use of these Officer Development Billets as follows:

> Officer Development Billets are provided for establishment within the Public Works Department as best suited to the needs of local Command. These billets may be used in a staff or line capacity dependent upon the development needs, ability and experience of the officer assigned. When established in a staff capacity, the billet will be indicated as Assistant for; Engineering, Maintenance, Utilities, Transportation or as a combination of two or more of these areas. The Engineering Officer referred to would be utilized in such areas as shore station development, planning which would materially enhance his background for future assignments. When the Shops Engineer Billet is established in the large PWD, no other line billets will be established in the operating divisions. "On-the-job" operational type training for junior officers is of major importance. It can only be taught by physical participation and direct responsibility for decisions made. Without this, the junior officer is deprived of an essential factor required for developing his professional confidence and leadership ability for assuming more senior billets. He should be given operational

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[69]Department of the Navy, Bureau of Yards and Docks, Organization and Staffing for Public Works Departments, Technical Publication NAVDOCKS TP-Ad-12 (Proposed revision of unknown date prior to June, 1958), pp. 1-3.

training assignments. The Public Works Officer has the primary responsibility for insuring that these Officers are provided maximum possible training. Flexibility of assignment has been provided to the Public Works Officer in order that he may utilize the officer's abilities and at the same time provide them with maximum on the job experience, based on their capabilities, the local situation and the additional practical development needed by the officers. These conditions will vary, and the Public Works Officer will need to resort to a number of different types and combinations of assignments. These will vary from permanent, intermittent or situation line assignments, to special project, liaison, coordinating and program manager type of assignments. Under normal conditions the number of Officer Development billets should be as follows:

Population of PWD	No. of Billets
800 and over	3
400 to 800	2
200 to 400	1
Less than 200	0[70]

The same basic inconsistency was still present, in spite of the fine principles expressed, since the number and use of these development billets were tied to the needs of the local Command. The needs of a local Command for untrained, unqualified junior officers was and is nonexistant. The local development program must be formulated on the basis of the needs of the Commands into which the trained and qualified officer will subsequently be rotated, since junior officer development is a long-range program that often has few short-range compensations aside from the very real satisfaction of seeing a young officer grow in maturity, ability, love for his Navy and Corps, and dedication to the ideals, principles, and goals

[70]Ibid., pp. 3-6-3-6a.

toward which they strive. Rather than being an innovation in junior officer use and development, this revised manual was an incorporation of the standard practices of the time. It insured the perpetuation of the poor development climate by assigning the greatest number of junior officers to the largest public works departments, in which:

1. The public works officer, although specifically assigned their training responsibility, would have the greatest number and scale of operating problems and consequently the smallest amount of time to devote to junior officer development.

2. The billet of shops engineer would probably be established, requiring the junior officers to be placed in staff rather than line positions over the operating divisions.

3. The civilian rating structure would be the highest, making it all the more difficult for the junior officer to exercise any real authority in the department.

4. There existed the largest number of organizational dead-end streets and dark corners in which the junior officer could conveniently get lost and stay that way.

This revision, had it been promulgated, would clearly have made little if any improvement to the junior officer development situation.

<u>Organization and Functions for Public Works Departments</u> (NAVDOCKS P-312)

This document cancelled and superceded the manual referenced above, although it had the same purpose and covered the same general material. The detailed descriptions of the duties of the public works officer, assistant public works officer, and shops engineer still contained no specific references to responsibility for junior officer development; and the military billets were generally described as follows:

> The Public Works Officer is so designated by official orders of the Bureau of Naval Personnel. In addition to the billet of Public Works Officer, a billet should be established for an Assistant Public Works Officer and in some cases, a Shops Engineer. Such additional billets as are required for the effective operation of the Public Works Department may be assigned. Billets other than the Public Works Officer, the Assistant Public Works Officer and the Shops Engineer are designated as Assistants to the Public Works Officer. The utilization and assignment of the assistants is a responsibility of the Public Works Officer and should be based on the needs of the particular activity, the capability of the officer and needs of the particular officer for development in order to assume increased responsibility. Billets of Assistants to the Public Works Officer for Maintenance, Utilities, Transportation, Maintenance Control, or Engineering (or combination thereof) should be considered as a staff officer in the true sense of the word, a direct manifestation of the responsibilities and authority of the Public Works Officer. The exception to this is in those cases when a Shops Engineer billet has been established. In such instances the officers may be assigned as Assistants to the Shops Engineer.[71]

Most germane to this study is the order of the items upon which utilization and assignment of junior officers was to be based:

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[71]Department of the Navy, Bureau of Yards and Docks, Organization and Functions for Public Works Departments, NAVDOCKS P-312, February 1959, p. 11.

1. The needs of the particular activity.

2. The capability of the officer.

3. The needs of the officer for development.

This order characterizes the inconsistency that had existed in each of this family of procedures manuals, that of placing the "needs of the particular activity" before the need for junior officer development in spite of the fact that development was necessary before the officer had the capability to fulfill any of the needs of that or any other activity or command. Each of these organization manuals had appeared to suggest that the needs of an activity were for unqualified, untrained bodies filling particular billets rather than for qualified, trained officers performing the duties required by particular billets.

Organization and Functions for Public Works Departments (NAVDOCKS P-318)

This manual cancelled and superceded the one referenced above, and is the one presently current. It has reversed an important part of the junior officer utilization trend by defining the military billets as follows:

> The Public Works Officer is so designated by official orders of the Bureau of Naval Personnel. In addition to the billet of Public Works Officers, the following military billets are authorized:
>
> Assistant Public Works Officer
> Shops Engineer
> Maintenance Engineer Officer
> Utilities Engineer Officer
> Transportation Engineer Officer

These billets, when established, shall function in a line capacity.[72]

While the descriptions of the duties of the public works officer and the assistant public works officer are deficient in that they contain no clear statement of responsibility for junior officer development, the description of the shops engineer billet remedies this in part by stating:

> The Shops Engineer will have under his immediate direction one to three division officers who are designated as Maintenance Engineer Officer, Utilities Engineer Officer, and/or Transportation Engineer Officer. These officers are to function in a line capacity when determined to be qualified by the Commanding Officer to carry out these functions. Normally, these division officers will be in the rank of ensign and lieutenant junior-grade. The qualification of these officers is a responsibility of the Commanding Officer and every effort should be made to accelerate this qualification and assignment of the officer to a position of line responsibility. Qualification of these officers may be accelerated by having the officers complete one of the junior officers on-the-job Training Programs promulgated by BuDocks Instruction 1520.5 of 13 May 1960.[73]

The position of the unqualified junior officer is not clear, but this does indicate that the shops engineer is to exert every effort to develop his junior officer assistants to the point at which the Commanding Officer will declare them qualified for line positions over the operating divisions. It further references a real innovation, the recently developed Junior Officer On-The-Job Training Programs promulgated in

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[72]Department of the Navy, Bureau of Yards and Docks, Organization and Functions for Public Works Departments, NAVDOCKS P-318, November, 1960, Paragraph B2.02, pp. 6-7.

[73]Ibid., Paragraph C3.01, p. 26.

May 1960. The three courses of training constituting this program for public works activities are an excellent attempt to utilize in a meaningful way the junior officer development policy originally outlined in U. S. Navy Regulations, and they have proved to be quite effective when properly employed in accordance with the principles stated in the foreword of each of the courses:

> A training program cannot substitute for two other ingredients which are essential to an officer's professional development. These ingredients are:
>
> 1. Experience which can only be gained by actual doing--working at productive tasks involving the maximun responsibility appropriate to the individual's education, experience and maturity;
>
> 2. The wise and sympathetic guidance of experienced seniors.
>
> This training program is intended to supplement, not replace, these ingredients.[74]

In spite of their proved effectiveness, however, these courses have not been so widely used as they could be. Personal correspondence from the Manager of the Training Branch, Office of Military Functions, Bureau of Yards and Docks, on 11 February 1963, indicated that there was "violent disagreement" over this program and that some officers, both senior and junior, were strongly opposed to them as being much too time consuming. In conference with the Officer in Charge, U. S.

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[74]Department of the Navy, Bureau of Yards and Docks, Civil Engineer Corps Junior Officer On-The-Job Training Program for Public Works Maintenance, NAVDOCKS P-85; Utilities, NAVDOCKS P-83; and Transportation, NAVDOCKS P-82; all May, 1960.

Naval Construction Battalion Center, Port Hueneme, California, on 15 March 1963, however, a different point of view was expressed. He felt that the program was not widely accepted by the senior officers in the Corps and consequently not being used much outside of those activities under the management control of the Bureau of Naval Weapons. That Bureau has strongly endorsed and encouraged the completion of the program by junior officers attached to public works departments at their activities. The opinion of the U. S. Naval School CEC Officers was derived from the results of a questionnaire sent to 184 junior officers. Of the 125 replies received, 63 were from junior officers in standard public works billets. The conclusions from that study are noteworthy:

1. CEC junior officers desire and welcome assistance and encouragement in professional development.

2. A significant minority of CEC JO's in typical Public Works billets believe that the duties given them do not offer optimum opportunity for development.

3. The BuDocks Public Works JO training programs have been accepted enthusiastically at BuWeps stations, and marginally throughout the balance of the Naval Shore Establishment.

4. Their acceptance by senior officers of the Corps generally is marginal (deduced from usage at non-BuWeps stations).

5. The courses are generally well accepted by the junior officers who take them.

6. Use of the courses is accompanied by increased activity on the part of the CEC junior officers in other forms of professional development.[75]

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[75]Captain Mark H. Jordan, CEC, USN, "CEC Junior Officer

This manual also attempts to improve the junior officer development climate in three ways:

1. It states that, with regard to duties and responsibilities assigned to Shops Division Officers,

> An assignment of responsibility should not be made in any case without the commensurate delegation of authority.[76]

2. It requires that

> A periodic review of the duties of the Division Officers will be made by the Public Works Officer and the Shops Engineer to insure that maximum utilization of the officer concerned is being obtained.[77]

3. It lists typical duties for the three Shops Division Officers, thereby offering necessary and heretofore lacking guidance in their utilization. These changes and improvements may be recognized as conforming to basic executive development principles that have been proved to be effective both in the Navy and in private industrial organizations.

One important aspect concerning the utilization of junior officers, however, has not been changed. This is the assigning of the greatest number of such officers to those public works departments at the largest stations. The system for determining the numbers of junior officers to be assigned to a particular activity has been considerably formalized by this manual, as shown by Paragraph B2.03 and Table I and II, pages 7-9, here reproduced.

Professional Development" (U. S. Naval School, Civil Engineer Corps Officers, U. S. Naval Construction Battalion Center, Port Hueneme, California, 11 January 1963), p. 3 (Mimeographed).

[76]Department of the Navy, Bureau of Yards and Docks, Organization and Functions for Public Works Departments, NAVDOCKS P-318, November, 1960, Paragraph C3.01, p. 27.

[77]Ibid.

B2.03 Billet Requirements

Billets shall be established according to the level and scope of work at the particular activity. Table I provides four factors to be used as a general guide for establishing the number and rank requirements for military billets. The factors shown are combined to obtain an assessment index for the activity. Table II provides a tabulation of recommended billets based on activity assessment index. The following provides an example of how Tables I and II are used.

From Table I:

	Factor
Department Personnel - 390	7
Annual Station M&O Funds - $5,800,000	6
Class II Plant Account - $36,000,000	8
Contract Authority - BGX	7
Assessment Index	28

From Table II:

Assessment Index	PWO Rank	APWO	Shops Engineer	Shops Officer
28	CDR	LCDR	LT	2 LTJG/ENS

The guidance provided in Table II represents the optimum requirements both for numbers and rank. Actual approval of billets will depend on total Civil Engineer Corps billets allocated to the various management bureaus. The established procedures for obtaining authorization for billets are contained in current BuPers instructions. Activities that have a wide diversity of work, a wide geographic distribution of duties, or that are located at overseas or remote locations may require military billets in addition to those indicated in Table II.

TABLE I

ASSESSMENT INDEX FACTORS

P.W. DEPT. PERSONNEL (NO. OF PERSONS		TOTAL M&O FUNDS FOR ACTIVITY ($ IN THOUSANDS)		PLANT ACCOUNT CLASS II ($ IN THOUSANDS)		CONTRACT AUTHORITY WEIGHTED FACTOR*	
2000-700	10	120,000-35,000	10	185,000-75,000	10	AGBX	10
700- 500	9	35,000-12,000	9	75,000-45,000	9		
500- 400	8	12,000- 8,000	8	45,000-35,000	8	BGFX-BCGX	8
400- 275	7	8,000- 6,000	7	35,000-25,000	7	BGX	7
275- 200	6	6,000- 4,500	6	25,000-18,500	6		
200- 150	5	4,500- 3,500	5	18,500-13,000	5		
150- 125	4	3,500- 3,000	4	13,000-10,000	4	BG	4
125- 100	3	3,000- 2,000	3	10,000- 6,000	3		
100- 80	2	2,000- 1,500	2	6,000- 2,500	2		
80- 20	1	1,500-	1	2,500-	1		

*CONTRACT AUTHORITY IS INDICATED BY THE FOLLOWING CODES:
A-COMPETITIVE BID, LUMP SUM (AND UNIT PRICE) CONSTRUCTION CONTRACTS
B-SHORT FORM (SINGLE PAYMENT) CONSTRUCTION CONTRACTS
C-COMPETITIVE BID, LUMP SUM DEMOLITION CONTRACTS
F-LUMP SUM CONTRACTS FOR REPAIR, ALTERATION, AND OVERHAUL OF GOVERNMENT MOTOR VEHICLES AND CONSTRUCTION EQUIPMENT
G-CHANGE ORDERS A AND/OR B ABOVE AS APPLICABLE
X-LIMITED LONG FORM COMPETITIVE BID CONSTRUCTION CONTRACTS (NOT IN EXCESS OF $25,000); NEGOTIATED ARCHITECTURAL-ENGINEERING CONTRACTS (NOT IN EXCESS OF $1,500); AND ENGINEERING SERVICES CONTRACTS FOR BORING, TESTS, PRELIMINARY SURVEYS, TECHNICAL INVESTIGATIONS, ETC. (NOT IN EXCESS OF $1,000).

TABLE II

PUBLIC WORKS DEPARTMENT BILLETS

ASSESSMENT INDEX	CAPT	CDR	LCDR	LT	LTJG/ENS
38-33	1	1	1	3*	
32-26		1	1	1	2
25-20			1	1	2
19-14				1	2
13-4				1	1
3-1				1	

* As of December 1962 there were only two Public Works Departments in the entire Shore Establishment of the Navy with three LT's.

This system insures that those stations having the greatest number of public works department personnel, the largest maintenance and operating budgets, and the most expensive and expansive inventories of land and structures will have the most junior officers. As has been mentioned earlier, this practice is questionable from the point of view of junior officer development because:

1. The public works officer and his operating assistants are so busy with their large problems that they have only a limited amount of personal time to devote to their trainees.

2. The civilian supervisors are quite senior civil ser-

vants and do not take kindly to having junior officers in line positions over them.

3. Operating decisions in such departments are large and important ones with broad budgetary and personal ramifications; and few if any responsible public works officers are willing to allow untrained and unqualified young officers to participate in the making of such decisions. Thus deprived of the opportunity to practice managing, the junior officer is separated from the main source of professional development.

In accordance with this system, as of 2 December 1962 the 359 junior officers stationed in public works type activities were distributed as follows:

Public Works Officer.....33

Assistant Public Works Officer.....53

Shops Engineer.....33

Junior Officer Trainee.....240 (All at stations with four or more CEC officers).[78]

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[78]Department of the Navy, Bureau of Yards and Docks, Civil Engineer Corps Directory, NAVDOCKS P-1, December, 1962.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary

This study has summarized the best thinking of the period 1950-1962 concerning the effective executive development of junior engineers in private industrial organizations, and has also developed the current status of junior officer development in public works organizations as stated and practiced by the Civil Engineer Corps of the Navy. In comparison with private industry, the Corps has been shown to have both strong and weak points in its junior officer development programs. The strong points are:

1. The precedents in the navy for strong fraternal relationships between officers and for promotion from within have made for long-standing emphasis on junior officer development by responsible senior officers, while private industry has generally felt the need for ED only since the end of World War II.

2. The requirement for long range operational and material planning in the Navy has made both necessary and possible the accompanying personnel planning, an integral part of which has been officer development.

3. The Navy has in its Bureau of Naval Personnel a staff of experts in development and training to assist and support the line and technical bureaus in officer development planning

and program execution.

4. The development potential for junior CEC officers in public works organizations is greater than that which can be provided by most if not all of private industry. While the first several years for the junior engineer in industry are usually spent "at the drawing board" solving the detailed problems of his engineering discipline, the junior CEC officer goes directly into engineering management. In approximately 120 billets he may be the public works officer, assistant public works officer, or shops engineer, having direct authority over and responsibility for amounts of funds and numbers of personnel that would be considered quite large by managers in private industry. In the remaining 240 billets, as junior officer assistants to shops engineers or in other training billets, there is the possibility and hopefully the probability of line authority and responsibility.

In spite of these very strong points, however, CEC junior officer development in public works type activities has some serious weaknesses:

1. Development policy clearly involves both the training for better performance in the present job and the qualification for advancement into positions of increased authority and responsibility, but implementing programs at the local level have until quite recently been of the "sink or swim" variety. These are quite effective for training (provided

the candidate survives), but are of doubtful efficiency for broad executive development. The Junior Officer Training Programs, even when properly used, do not remedy this situation completely.

2. A coordinated, over-all approach to the needs, goals, standards, and programs for junior officer development has not been developed.

3. Full recognition and usage has not been made of the strong points mentioned above, particularly with regard to the development potential of the public works activity. The working climate in such activities has not been thoroughly analyzed from a development point of view.

4. It has been assumed that a background of technical competence is the prime prerequisite for the successful CEC officer. Private industry has proved that technical proficiency, while it bespeaks certain qualities that are of value to the executive, also is likely to involve definite management handicaps. Present junior officer development programs do little more than introduce the new officer to the general types of management skills he must acquire to supplement his technical training.

5. Public works activities normally have well defined organizations with position descriptions covering the areas of authority and responsibility for all personnel--except the junior officers. Consequently, at many stations there is no clear idea of the ways in which these young officers should

be utilized to the maximum benefit of both the organization and the officers.

6. The fitness report system is well established, and provides an ideal way of insuring that senior officers observe, review, and evaluate the performance of their juniors. This system is not used to its full potential, however, since the fitness report is almost exclusively a promotion document. The evaluation that forms the basis for the report could be (but rarely is) also a development tool, used by the senior officer to counsel his subordinates on their strengths, weaknesses, potentials, needs, and possible goals.

7. Many of the in-house and extra-organizational management development tools that have so successfully been used by private industry have not been emphasized in CEC junior officer development.

8. Junior officer development has not been stressed enough and at a sufficiently high Bureau of Yards and Docks organizational level to insure its being taken seriously at the local activity. Private industry has found that development plans, procedures, and programs left to the discretion of the lower echelons of management are all too often either subordinated to operational interests or ignored completely.

Conclusions

The Civil Engineer Corps must certainly recognize the failings and weaknesses in its junior officer development

process if progress is to be made. As in industry, there are many problem areas to be pondered before corrective action on any scale may be safely initiated. But the Corps is well aware of its short, intermediate, and long range needs for qualified junior officers. The Corps has a good set of standards, albeit unwritten in many instances and perhaps best left that way, of the level of proficiency to be expected from a well trained junior officer, and consequently a good understanding of desirable results from a development program. The Corps has a broad base of knowledge concerning the general problems and potentials of the usual public works activity operating environment, regardless of the management bureau for which it functions or its geographical location in the world-wide Shore Establishment of the Navy. The Corps is composed of engineers, and has a wealth of experience in the management development of engineers. The Navy and the Corps have the words and works of recognized naval leaders, both past and present, as a foundation for the goals and inspiration of junior officers who also aspire to positions of leadership. The Corps has a mission in the area of public works that is growing larger and more challenging every year, a mission capable of satisfying the needs and drives of outstanding, young, technically trained, leadership oriented junior officers. The Corps has decisions to make that are able to challenge the intellect and the courage of broad and able men, and often these decisions must be made amid con-

straints that frustrate and chafe even such men. On these and doubtlessly more bases, the Corps could, can, and must develop a system for the development of its junior officers that is at least as good as the best to be found in the private sector of the economy.

Bureau of Yards and Docks Action.

In order to be properly and consistently executed, such a junior officer development system must be initiated at the very top of the Bureau of Yards and Docks. It must be something that has the obvious blessing and backing of the Chief of the Bureau; and when begun, it must be promulgated in a spirit that clearly indicates that effective action and not reasons (or excuses) for non-compliance is the only valid response. From Bureau level must come a consistent junior officer development policy, clearly setting forth the dual development emphasis of training to qualify for the present job and development to qualify for advancement to positions of increased authority and responsibility. This policy must be stated in sufficient detail to insure that training is aimed at the real needs of the junior engineer-officer; that programs will be properly planned, organized, executed, and monitored; that specific results are expected from all public works activities; and that senior officers will be held responsible for and evaluated on the basis of their effectiveness as developers of their juniors as well as their operational abilities. From the Bureau of Yards and Docks, with

support from the Bureau of Naval Personnel as necessary, should come training materials such as films, case studies, seminar agenda, and reading programs, along with professionally developed instructions and ideas for their effective use. These materials should cover such things as communicating, human relations (leadership), executive perception, and the broader aspects of self-development, and should be presented as much as possible from the business management school rather than the training manual point of view. Expert assistance should be available from the management faculties of the U. S. Naval Postgraduate School and CECOS. And at Bureau level, liaison should be maintained with national organizations of educators and managers so that relevant conference schedules and periodicals are distributed and perhaps special meetings, conferences, seminars, and/or courses of instruction developed specifically to meet the needs of the junior CEC officer.

District Public Works Office Action

The next logical coordinating level for development of junior CEC officers in public works activities is the District Public Works Office. It is here that the resident experts in the fields of maintenance, utilities, transportation, housing administration, contract administration, facilities planning, etc. are to be found. These men are well qualified to conduct lectures, seminars, and conferences, either at the District

Office or at the station, for the instruction and training of junior officers. The District should act as the coordinating and distributing agency for Bureau-developed management training materials; and should provide, either from resident civilian and military personnel or from local educational or management institutions, qualified instructors for training sessions built around the use of these materials. A particularly valuable development service at District level would be vertical training activities, at which all the officers from one or several public works activities, junior and senior alike, could participate in development programs in a more normal organizational context. The District should also monitor junior officer development progress at the various activities within its area of cognizance, and evaluate the performance of the responsible senior officers at these activities with regard to their development effectiveness. The District should keep abreast of available opportunities for junior officers to participate in the conferences, courses of instruction, and organizational activities of local management groups, business schools, and civic organizations informing these officers of such opportunities and encouraging them to take advantage of them. And the District should maintain a comprehensive management library, from which junior officers could draw good reading materials.

Public Works Activity Action

As industry has proved, the daily working environment is the key to effective development of executive talent; and so, the local public works department or activity must be the central development workshop for junior CEC officers. It is here that they will develop their latent management skills by using them, and it is here that the recognition of management deficiencies will impress them with their need for further development. The job will provide them with the opportunities and requirements to communicate, to work with and influence people, to make decisions in uncertain situations on the basis of incomplete data, to engage in statistical and business analyses of various sorts, and to learn for themselves the values of evaluation, counseling, and training as they do these things for the employees of the departments that are under their control. As they deal with personnel and organizational problems, they will dicover the need for operational and administrative tools with which they were not equipped by their past technical educations. As they plan and control operational functions and facilities, they will recognize the need for broader vision, deeper insight, and greater perception. For the junior officer in the correct environment, properly counseled and directed by his superiors, discovering these personal deficiencies will stimulate his interest in and desire for professional development. But here, as industry has found, are the central requirements:

Development-oriented superiors. The junior officer must

have superiors who consistently present him with good personal, professional, and military examples. They must accept support, appraise, and counsel him in his ordinary working situation, with special summing-up times at which they decide together where he stands as an officer, what are his personal strengths and weaknesses, what progress he has made toward realizing his training and development goals, what new goals should be set, and how they will work together to realize these goals. As has been mentioned previously, fitness report time, or shortly before, is admirably suited for this.

Permissive working environment. Maximum development will not occur unless the junior officer is given a meaningful, necessary job with clearly defined areas of authority and responsibility. He must have some freedom to operate, to make decisions (and mistakes), and to be held responsible for both. He must not be protected from learning situations, although the mature judgement and greater knowledge and experience of his seniors must be readily available should the need for them arise. He should not be subjected to too much pressure at first, although he should be introduced to the crisis early in his career since it will be his constant companion. And he must see the opportunity for advancement, by rotation or special assignment, into positions of greater authority and responsibility as he develops. The industrial innovation of training by the trained offers an excellent opportunity for these criteria to be put into practice. This program of allow-

ing trained, qualified junior officers to train untrained junior officers could be accomplished by placing the majority of junior officer trainees in the small rather than the large public works activities. While it would require the complete reversal of present Bureau of Yards and Docks policy, there can be no doubt that having the job of assistant public works officer or shops engineer at a small station where the public works officer is below the rank of Lieutenant-Commander would place the trainee in a superior development environment to that in which he is an assistant to the shops engineer in a large activity.

More formal training sessions using materials and perhaps personnel obtained from the District Public Works Office should also be utilized, perhaps in conjunction with weekly officer staff meetings. This, in addition to the discussion of the other items of importance that arise from time to time, would give these meetings content, direction, purpose, and value.

And just as industry has extended its training and development efforts into the social sphere, the CEC senior officer should also make use of this area of life for development purposes. The unhurried, uncluttered atmosphere accompanying social intercourse is most conducive to discussions in depth of the things that really matter in the professional development of the junior officer. At such times they can discuss special operating or personal problems, current developments

in the public works or management fields, pertinent books or articles read, available conferences and courses of instruction, etc. The senior officer has practically limitless opportunities to influence and lead his subordinates outside of the work situation, and should not neglect to invite his juniors to participate with him in his own program of self-development both on and off the job.

The comprehensive development program generally outlined in these conclusions appears to be quite ambitious, and actually it is. Many of the pieces of such a program presently exist however; and most of those remaining would not require great financial expenditures. The principal resource of the CEC that must be expended to make this or any other junior officer development program effective is the personal time, interest, and attention of its senior officers. The program outlined above is aimed primarily at stimulating the interest of senior officers in the development of their juniors--and requiring the interest of those who, for some reason, would not of their own volition respond to such stimulation. With the senior officers in the Corps dedicated to the development of their juniors, practically any program will be outstandingly successful. Without this dedication, any program will be a dismal failure. Success depends upon seeing CEC junior officer development and the continuing abilities of the Navy and the Corps to perform their missions as synonymous.

Implications

In addition to its application to the problems of training and qualifying junior officers to perform adequately in present billets and to assume more responsible billets, the proper development of junior officers also bears directly on the solution to the junior officer turnover problem in the CEC.

Each year the Corps finds it necessary to recruit (and train to insure the minimum acceptable naval orientation) approximately 200 young engineers, usually directly from colleges. Practically all of this group are obtained through the several officer procurement programs which require only a three-year tour of active duty, at the end of which they are automatically released from active duty unless voluntary extension or augmentation into the Regular Navy is requested. This means that there are just three years in which to recruit, train, develop, utilize, and hopefully challenge these young officers to request career status in order that the strength and vitality of the CEC may be maintained. Success thus far has been something less than outstanding, and only about 50 of each annual increment of 200 become career officers. That any segment of private industry could long exist with a 75% rate of turnover in its junior management ranks is extremely doubtful.

Some of these men, due to their personalities and psychological make-ups, are simply not suited to a military career; and it is well for the Corps that they elect to leave upon expiration of their periods of obligated active duty

service. If they tried to make the CEC their life's work, they would doubtlessly prove unsuccesful and be shortly pruned out by the promotion system. Others find that they aspire to heights of technical engineering achievement that their largely managerial and executive duties in the Corps do not provide, and so revert to civilian occupations in which this need is better able to be satisfied. Still others find that their wives and/or families are not happy in their military environment, and leave for the very valid reason that it is best for their family relationships. But these items cannot alone account for the rapid junior officer turnover. Many of those who leave the Corps do so feeling that their years of active duty were a gross waste of their time and talents. It represents a parenthetical period in their young lives during which they were deprived of the opportunity to make a significant and meaningful contribution to the welfare of an organization and were instead allowed to wander aimlessly through one or two tours of duty, untrained, undeveloped, unchallenged, unused, in many cases unappreciated, and at a rate of compensation perhaps one-half to one-third of what they could reasonably expect from private industry for their services.

The low pay scales are mentioned in passing--they only add insult to injury. The main problem is the lack of psychic income for these junior officers, which can only be derived from the knowledge of having performed a meaningful job in a satisfactory manner. Proper management development for these

officers, as discussed in this study, is one of the keys to the solution of this problem.

Recommendations

Although it has not been developed in this study, the first step in the executive development of the junior engineer-manager is his selection. Junior officer selection for the CEC is based primarily upon technical engineering competence, and certainly this is an important part of the make-up of the successful CEC officer. Industry and the Corps have found, however, that not all technically competent engineers have either the talent or the desire to be executives. In industry the young engineer is usually set to work in a technical job and observed for a few years to see whether or not he has leadership and administrative abilities and/or aspirations. In the Corps this observation period is not available, and each young officer is immediately detailed to a billet that potentially has executive ramifications.

Industry, particularly that segment hiring large groups of engineers, is becoming less satisfied with their approach to discovering engineering-management talent; and tests are currently being developed to see if somehow the latent leadership ability of the young engineer can be discovered and developed much earlier in his career. Such a testing program is presently being conducted on a "pilot shop" basis at Lockheed Aircraft Corporation, California Division, Burbank,

California; and their short experience indicates that there may well be some positive correlation between test results and the management potential of the testees. It will doubtlessly be several years before this program and the others presently being conducted have been given sufficient usage that their findings may be considered valid; but at that time a study of such testing programs could be of great value in revising the selection procedures for CEC junior officer procurement. The ability to recruit officer candidates with both technical ability and executive propensities would considerably lessen development and retention problems.

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